

Applic. No.: 10/056,356

Amdt. Dated August 27, 2004

Reply to Office action of July 1, 2004

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-28 remain in the application. Claim 1 has been amended. Claims 13-27 have been withdrawn.

In the section entitled "Claim Rejections - 35 USC § 102" on pages 2-3 of the above-mentioned Office action, claims 1-2, 5, and 28 have been rejected as being anticipated by Akram et al. (US Pat. No. 5,956,605) under 35 U.S.C. § 102(b); claims 1-5 and 28 have been rejected as being anticipated by Farnworth (US Pat. No. 6,537,482) under 35 U.S.C. § 102(e)

In the section entitled "Claim Rejections - 35 USC § 103" on pages 3-4 of the above-mentioned Office action, claims 6-9 have been rejected as being unpatentable over Farnworth under 35 U.S.C. § 103(a).

The rejections have been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 4, lines 18-22 and page 20, lines 10-13 of the specification as well as Figs. 2 and 4.

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Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

at least said corner regions of said rear side, said edge regions of said rear side, and said side border regions of said semiconductor chip having a plastic coating with a thickness between 0.5 μ m and 50 μ m, said active upper side of said semiconductor chip remaining substantially free from said plastic coating.

Akram et al. teach an electronic component in which the semiconductor chip is flip-chip mounted to a substrate. The chip is hermetically sealed by a silicon nitride coating. It is noted that silicon nitride is a ceramic and not a polymer as stated by the Examiner.

Farnworth teaches a method for underfilling and encapsulating flip chip semiconductor devices, which are mounted on a carrier substrate. Farnworth, therefore, teaches a component, which includes a plastic coating that encapsulates all surfaces of the chip.

In contrast, the invention of the instant application discloses a component in which a plastic coating is positioned on at least regions of the rear passive side and the side border regions of the chip. The Active front side of the chip remains substantially free from the plastic coating.

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The invention of the instant application relates to chip size packages in which the rear and side borders of the silicon chip form the outer sides of the package. In particular, the invention of the instant application addresses the problem of the cracking of semiconductor chips during the burn in, testing and further manufacturing steps. This problem is solved according to the invention of the instant application by providing a chip size package in which the rear side and the side border regions of the chip are protected from damage during the functional testing process by a thin plastic coating. The invention of the instant application teaches the use of a plastic material, which selectively wets the semiconductor material of the chip but not the structures on the active surface.

Akram et al. teach away from the use of polymer coating (see, for example, the introduction and, in particular, column 2, lines 1-13 of Akram et al.). Akram et al. teach a hermetically sealed semiconductor package which is coated on all sides, including the active surface, by the silicon nitride coating. It is, therefore, not obvious from the teaching of Akram et al. to provide an electronic component in which the rear and side regions are at least partly coated by

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plastic and the active surface remains substantially free from the plastic coating.

Farnworth addresses the problem of underfilling flip-chip type package and, therefore, also teaches a plastic coating on the active surface of the semiconductor chip. Farnworth specifically addresses the problem of providing a complete coating of the active surface of the chip (see column 4, lines 18-19) and, therefore, also teaches away from the provision of an electronic component according to claim 1 of the instant application.

Clearly, neither Akram et al. nor Farnworth show "at least said corner regions of said rear side, said edge regions of said rear side, and said side border regions of said semiconductor chip having a plastic coating with a thickness between 0.5 μm and 50 μm , said active upper side of said semiconductor chip remaining substantially free from said plastic coating," as recited in claim 1 of the instant application.

Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

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In view of the foregoing, reconsideration and allowance of claims 1-12 and 28 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted

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